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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,640	02/04/2004	James Ferguson White	4736A	3706
48227	7590	09/16/2008		
BASF CATALYSTS LLC 100 CAMPUS DRIVE FLORHAM PARK, NJ 07932			EXAMINER OH, TAYLOR V	
			ART UNIT 1625	PAPER NUMBER
			NOTIFICATION DATE 09/16/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/771,640	Applicant(s) WHITE, JAMES FERGUSON	
	Examiner Taylor Victor Oh	Art Unit 1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-24, 29, 31, 33, 34 and 36-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-24, 29, 31, 33, 34 and 36-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/4/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/18/08 has been entered.

Non-Final Rejection

The Status of Claims :

Claims 17-24, 29,31 33-34, and 36-38 are pending.

Claims 17-24, 29,31 33-34, and 36-38 are rejected.

DETAILED ACTION

Priority

1. It is noted that this application is a division of 10/036,822 (12/21/01) (US 6,706,658).

Drawings

2. The drawings filed on 02/04/2004 are accepted by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 17-24, 29,31 33-34, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romanenko et al (WO 01/087798) ,which is equivalent to Romanenko et al (EP 1205241).

Romanenko et al (EP 1205241) discloses the following abstract:

Art Unit: 1625

(57) Abstract: The invention relates to catalytic compositions from metals of group VIII, used for purification of terephthalic acid, to methods of preparing such compositions and to a process of purification of terephthalic acid. The invention allows for creating stable and selective catalysts used in the process of purification of terephthalic acid. The catalytic composition comprises crystalline particles of palladium or catalytically active palladium and of at least one metal of group VIII of the periodic table, whereby said elements are deposited on the surface of a carbonated matter. The carbonated matter represents a mesoporous graphite-like material, whereby the size of pores thereof is comprised between 40 and 400 Å, the proportion of pores in the total volume is at least 0.5 and the degree of similarity thereof to graphite is at least 20 %. The crystalline particles of the metals are distributed across the volume of the granules of said carbonated matter such that the maxima of distribution of the active components of the granule are separated from the external surface of the granule by a distance equal to 1-30 % of the radius of the granules. The inventive catalytic composition comprises crystalline particles of palladium and rhodium or of palladium and ruthenium or else of palladium and platinum, whereby the total metal content may vary between 0.1 and 3.0 wt.%, and the ratio of palladium to other metals may vary between 0.1 and 10.0.

Example 3.

[0030] The catalyst is prepared by combined application of Ru and Pd, using aqueous solutions of RuOHCl_3 and H_2PdCl_4 as metal precursors, respectively. For this purpose, a cylindrical rotated reactor is charged with 50 g of Sibunit 1 carbon carrier, 13 ml of an aqueous solution of Na_2CO_3 (0.371 mole/l) and 13 ml of H_2PdCl_4 (0.109 mole/l) + RuOHCl_3 (0.076 mole/l) are fed to a nozzle with the same space velocity (2.5 ml/min) in the molar ratio $\text{Na}_2\text{CO}_3 : (\text{Ru} + \text{Pd}) = 2 : 1$, and the resulting mixture is sprayed into the reactor. The catalyst is discharged and dried under vacuum at 70°C to constant weight. The subsequent operations of reducing, washing and drying are similar to Example 1. The resulting product is a (Ru-Pd)/Sib. 1 catalyst containing 0.2 percent by weight of ruthenium and 0.3 percent by weight of palladium.

(see page 5 , example 3).

Example 38.

[0069] The method of purifying terephthalic acid is similar to that described in Example 38, the difference being in that the purification is carried out on the catalysts prepared as described in Examples 3 and 34 with an increased initial content of p-carboxybenzaldehyde, equal to 30,000 ppm.

[0070] The analytic data on the quality of terephthalic acid purified by this method are presented in Table 5.

(see page 9, example 38).

Example 39.

[0071] 500 ml of distilled H_2O , 25 g of impure terephthalic acid containing 3562 ppm of 126 ppm of p-toluic acid are charged into a 750 ml stainless steel cylinder (solvent). After that the autoclave cover is put onto the cylinder and screwed down tightly. 2.0 g of the catalyst prepared as described in Example 1 are placed on a grid of a reactor comprising a stainless steel tube with an inner diameter of 10 mm, having a drain opening at the height of 110 mm from a lower grid, and fixed from the top with the second grid. The reactor is coupled to the solvent. The drain opening of the reactor via a thermostated steel capillary is tightly coupled to a crystallizer which comprises stainless steel autoclave having a capacity of 750 ml. The solvent, reactor and crystallizer are disposed in a heated temperature-controlled cabinet. The system is purged with nitrogen, then with hydrogen. H_2 being bubbled through the aqueous suspension of terephthalic acid in the solvent, and the pressure is brought up to 10 atm with hydrogen. On the control panel the temperature is set to be 250°C, and heating of the temperature-controlled cabinet is switched on. As soon

as the temperature in the system reaches the prescribed value, hydrogen is supplied to the solvent with a constant space velocity by means of a gas flow regulator. Constant pressure in the system is maintained by keeping a pressure regulator disposed at the crystallizer outlet in "pulled back" position. As the gas gradually enters the system, it displaces the terephthalic acid solution from the solvent into the reactor, and the terephthalic acid solution is forced with a constant velocity through the catalyst bed from bottom upwards and drained through the drain opening into the crystallizer. Forcing the solution through the reactor takes 8 hours. The reaction mass is cooled down, and the setup is purged with nitrogen. The contents of the crystallizer (terephthalic acid suspension in water) are transferred to a glass filter, filtered, washed with distilled water (100 ml), and dried under vacuum at 75°C for 2 hours. From the powder of terephthalic acid thus obtained samples are taken for impurity analysis.

(see pages 9-10 ,example 39).

Table 1. Main characteristics of some granulated porous carbon materials

Nos.	Grade	Origin (source)	Appearance	Size, mm	$A_{\text{BET}}^{(1)}$, m^2/g	$V_{\text{micro}}^{(2)}$, cm^3/g	$V_{\text{mesop}}^{(3)}$, cm^3/g	$V_L^{(4)}$, cm^3/g	V_{meso}/V_L	$D_{\text{mean}}^{(5)}$, Å	$K^{(6)}$, %
1	AK-B	Coal	Rod-like	4-5	438	0.192	0.027	0.219	0.12	20	5
2	CS-5	Coconut carbon	Crushed	3-6	1024	0.438	0.047	0.485	0.10	19	10
3	L-2702	Coal	Rod-like	4-8	1024	0.453	0.046	0.499	0.03	19	
4	FB-4	Coal	Rod-like	4-6	606	0.222	0.144	0.366	0.39	24	
5	KVO-1	Hydrocarbons	Granule	3-5	120	0.010	0.310	0.32	0.97	107	40
6	Sibunit 1	Hydrocarbons	Granule	2-3	440	0.015	0.665	0.680	0.98	62	60

⁽¹⁾ A_{BET} (m^2/g) is the specific surface area according to BET. The surface area was calculated within the hysteresis region where $P/P_0 = 0.05-0.20$; the value of the nitrogen molecule area in the filled monomolecular layer was assumed to be equal to $\omega = 0.162 \text{ nm}^2$.

⁽²⁾ V_{micro} (cm^3/g) is the volume of micropores. It was calculated, using comparative method within isotherm regions corresponding to the region between the filling of micropores and the onset of capillary condensation; the value V_{micro} corresponds to the total volume of ultramicro- and supermicropores, that is, to the volume of micropores whose size is smaller than 20 Å.

⁽³⁾ V_{meso} (cm^3/g) = $V_L - V_{\text{micro}}$.

⁽⁴⁾ V_L (cm^3/g) is the volume of pores whose size is smaller than 5000 Å. It is calculated from the adsorption of nitrogen at $P/P_0 = 0.98$.

⁽⁵⁾ D_{mean} (Å) is the mean size of pores, calculated as $D_{\text{mean}} = 4 \cdot 10^4 \cdot V_L / A_{\text{BET}}$.

⁽⁶⁾ K (%) is the degree of crystallinity, calculated from the integral peak intensity (002); diffractograms were recorded on a H3G-4C diffractometer ($\text{CuK}\alpha$, graphite monochromator).

(see page 11 ,table 1).

However, the instant invention differs from the prior art in that a second set pores having a pore diameter between 5,000 angstroms and 20,000 angstroms; 34% of total Hg porosity occurs in pores having a diameter of about 5,000 angstroms.

With respect to 34% of total Hg porosity happened in pores having a diameter of about 5,000 angstrom, it is silent. However, the porosity is the ratio for the non-solid volume of the total volume of the material; this value can be determined by Hg penetrometry; therefore, the % of total Hg porosity can be naturally obtained as the result of evaluating the porosity of the carbonaceous material, but it is not associated with the novelty of the carbonaceous material in the granulation process.

Concerning the pore diameter of 5,000 angstrom or more than 5,000 angstrom, the prior art expressly discloses that V_{Σ} is the vol. of pores whose size is smaller than 5,000 angstrom (see page 11, table 1). The claimed ranges and prior art do not overlap but are close enough that one skilled in the art would have expected to have the same properties or at least similar properties in the absence of an unexpected result. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to arrive at the claimed limitation by a routine experimentation.

Romanenko et al expressly discloses the purification of the terephthalic acid to be carried out on the catalyst containing palladium and ruthenium prepared from the basis of various characteristics of granulated porous carbon materials as shown in table 1; furthermore, the pore diameter of the claimed ranges and prior art do not overlap but are close enough that one skilled in the art would have expected to have the same properties or at least similar properties in the absence of an unexpected result. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to modify the size of the pore diameter of the carbonaceous material by a routine

Art Unit: 1625

experimentation in order to optimize the catalytic process. This is because the skilled artisan in the art would expect such a manipulation to be feasible and successful in the prior art process.

Applicants' Argument

Applicants argue the following issue:

- a. The prior art does not disclose that the second set of defined pore structures is between 5,000 angstroms and 20,000 angstroms; and the minimum 34% of total Hg porosity is happened in pores having a diameter of about 5,000 angstrom.
- b. The prior art discloses that the porosity for the largest diameter of pores is less than 5,000 angstroms, therefore, it is not anticipated over the claimed invention.

Applicants' arguments have been noted, but the arguments are not persuasive.

First, regarding the first argument, the Examiner has noted applicants' arguments. However, regardless of whether the first set of the pores and the second one are present in the activated carbonaceous material, the prior art does teach generally that the average mesopore size in ranges of from 40 to 400 angstroms with at least 0.5 proportion of the total pore volume; furthermore, the prior art does recognize that at least the vol. of pores whose size is smaller than 5,000 angstrom with specific set of data according to table 1 (see page 11, table 1). This also implies that it

Art Unit: 1625

seems reasonable to assume that there is a possibility that the vol. of pores whose size being larger than 5,000 angstrom is present in the activated carbonaceous material. Moreover, the porosity is the ratio for the non-solid volume of the total volume of the material; this value can be determined by Hg penetrometry; therefore, the % of total Hg porosity can be naturally obtained as the result of evaluating the porosity of the carbonaceous material, but it is not associated with the novelty of the carbonaceous material in the granulation process. Therefore, applicants' argument is not persuasive.

Second, regarding the second argument, the Examiner has noted applicants' arguments. However, as indicated in the above, the claimed ranges and prior art do not overlap but are close enough that one skilled in the art would have expected to have the same properties or at least similar properties in the absence of an unexpected result. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to modify the size of the pore diameter of the carbonaceous material by a routine experimentation in order to optimize the catalytic process.

Therefore, applicants' argument is not persuasive.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

Art Unit: 1625

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Taylor Victor Oh/
Primary Examiner, Art Unit 1625

9/10/08